1. Purpose of and Need for Action

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1.1 Purpose of the Action

The purpose of the proposed action is to improve regional highway connections with an extension of State Route (SR) 509 to serve future transportation needs in southwest King County and to enhance southern access to Seattle-Tacoma International (Sea-Tac) Airport.

1.2 Project History

The existing SR 509 corridor was adopted by the Washington State Transportation Commission in 1957 and authorized by the legislature in 1959 to accommodate a limited-access highway between Seattle and Tacoma. Part of its function was to be an interregional freeway of up to six lanes running parallel to Interstate 5 (I-5).

Design and construction proceeded from south Seattle to Burien in the 1960s. In the early 1970s, approximately 3.3 miles of right-of-way was purchased from Burien to SR 516 in the City of Des Moines. Because of rising costs, tightening federal and state highway construction funds, and opposition to continuing the highway, the Washington State Department of Transportation (WSDOT) abandoned the plans to continue construction of the route. In 1979, the state completed the last freeway segment from South 160th Street to South 188th Street.

In 1985, the City of Des Moines passed a resolution for WSDOT to terminate SR 509 at South 216th Street or northwards, and turn back the remaining unused right-of-way to the city. In 1986, the Port of Seattle recommended construction of a new south access road to Sea-Tac Airport. This proposal was determined by King County to be in conflict with the limited capacity of the county's road network in place at that time. A 28th/24th Avenue South study was initiated by King County and later taken over by the City of SeaTac.

In 1986, WSDOT requested that King County include an SR 509 analysis in the *Sea-Tac/Communities Plan Update* and associated environmental impact statement (EIS). During 1987 and 1988, King County, with WSDOT participation, developed the *Sea-Tac Area Update* and issued an SR 509 report recommending extension of the highway to join I-5 in the vicinity of South 210th/211th Street.

These events, together with the incorporation of the City of SeaTac in 1989, a transportation planning study for the City of Des Moines, the desire of the

Port of Seattle to explore a new airport south access route, and a public/ private committee study identifying the need for additional facilities in the area, resulted in a joint public/private SR 509/South Access Advisory Committee being formed in 1990 for the further study of intermodal projects in the area. This committee evolved into the current SR 509/South Access Road Executive and Steering Committees. The Executive Committee is a decision-making body composed of elected officials from the Cities of SeaTac and Des Moines, King County, Port of Seattle, 33rd Senate District, and 30th House of Representatives District, and the WSDOT Regional Administrator. The Steering Committee is composed of technical staff from the Cities of SeaTac, Des Moines, Burien, Kent, Federal Way and Normandy Park, King County, Port of Seattle, WSDOT, Federal Highway Administration (FHWA), and Federal Aviation Administration (FAA); the Steering Committee makes recommendations to the Executive Committee.

Between 1991 and 1995, the Steering Committee worked closely with a consultant team to screen corridor alternatives and oversee the environmental analysis. A Draft EIS (DEIS) evaluating environmental impacts at a corridor level was issued in 1995 (FHWA et al. 1995). Specifically, it documented potential impacts within a potential roadway corridors rather than within specific roadway alignments. In response to comments received on the DEIS, the decision was made to identify alternative roadway alignments to be evaluated in a project-level EIS. Since then the Executive Committee, Steering Committee, and other affected agencies have worked to identify the alternatives evaluated in this Revised DEIS. Chapter 2 includes a description of the alternatives selection process.

1.3 Need for Action

The SR 509 freeway terminates at South 188th Street/12th Place South, and does not connect to the regional transportation highway system. This leaves a major gap in the system. As a result, local streets and major transportation routes like I-5 are at or over capacity given current travel demand. This situation is expected to worsen as travel demand for Sea-Tac Airport and on major roadways increases.

1.3.1 System Linkages

An important link in the state freeway system is missing within southwestern King County—a limited access connection between I-5 and the existing limited access portion of SR 509, which commences northbound at South 188th Street/12th Place South in Burien. Currently, the SR 509 corridor consists of a four-lane freeway north of Des Moines Memorial Drive/12th Place South, with a two- to four-lane arterial street south of that point. To the north, SR 509 has major connections to SR 99; to the south, it passes through the Cities of Normandy Park, Burien, and Des Moines, serving as a major connection to the regional system for residents. South of Des Moines, Marine

View Drive and 16th Avenue South were previously the signed SR 509 route. In 1992 the state transferred jurisdiction of these roads to the local agencies; the SR 509 route currently is discontinuous between SR 516 and Dash Point Road in Federal Way. South of SR 516, the SR 509 corridor is coincident with SR 99 until it connects with Dash Point Road.

The impact of this missing link is reflected in the heavy congestion on other freeways in the project vicinity, and the relatively low volume per hour per lane (vphpl) during the p.m. peak hour (between 4:30 p.m. and 5:50 p.m.) on SR 509 south of SR 518. In that section of roadway, the vphpl southbound is 1,150, but northbound it is only 500. In comparison, I-5 south of SR 518/ I-405 carries 2,060 vphpl southbound and 1,390 vphpl northbound. The underutilization of SR 509 is due primarily to its lack of a regional connection to and from the south.

A southern regional access route to Sea-Tac Airport from I-5 is also missing from the transportation system. Local access to Sea-Tac Airport from the south is only possible from the arterial street system at approximately South 182nd Street/SR 99. Local traffic can also access the North Access Expressway at South 170th Street. Currently, the primary regional access route from the south is I-5 via SR 518 and the North Access Expressway; this route requires vehicles to pass through the congested I-5/I-405 interchange and the Southcenter Hill portion of I-5.

1.3.2 Travel Demand and Capacity

The following discussion of travel demand and capacity first describes existing conditions and then discusses anticipated conditions of the project implemented.

Existing Conditions

The I-5/SR 99/SR 509 corridor is one of the most heavily traveled in the state. A number of local roadways and intersections are congested because of high volumes of vehicles accessing the region's major transportation routes and Sea-Tac Airport.

Traffic Volumes and Level of Service

Traffic volumes in the project vicinity vary widely, with average daily traffic volumes as high as 200,000 vehicles per day on I-5 north of I-405. Peak-hour volumes (when congestion is highest) are typically about 8 percent of daily volumes. The highest single hour of demand typically occurs during the p.m. peak hour. The p.m. peak-hour volumes in the project vicinity range as high as 16,000 vehicles per hour (vph) total (in both directions) on I-5 north of I-405. The p.m. peak-hour traffic volumes are summarized in Figure 1.3-1.

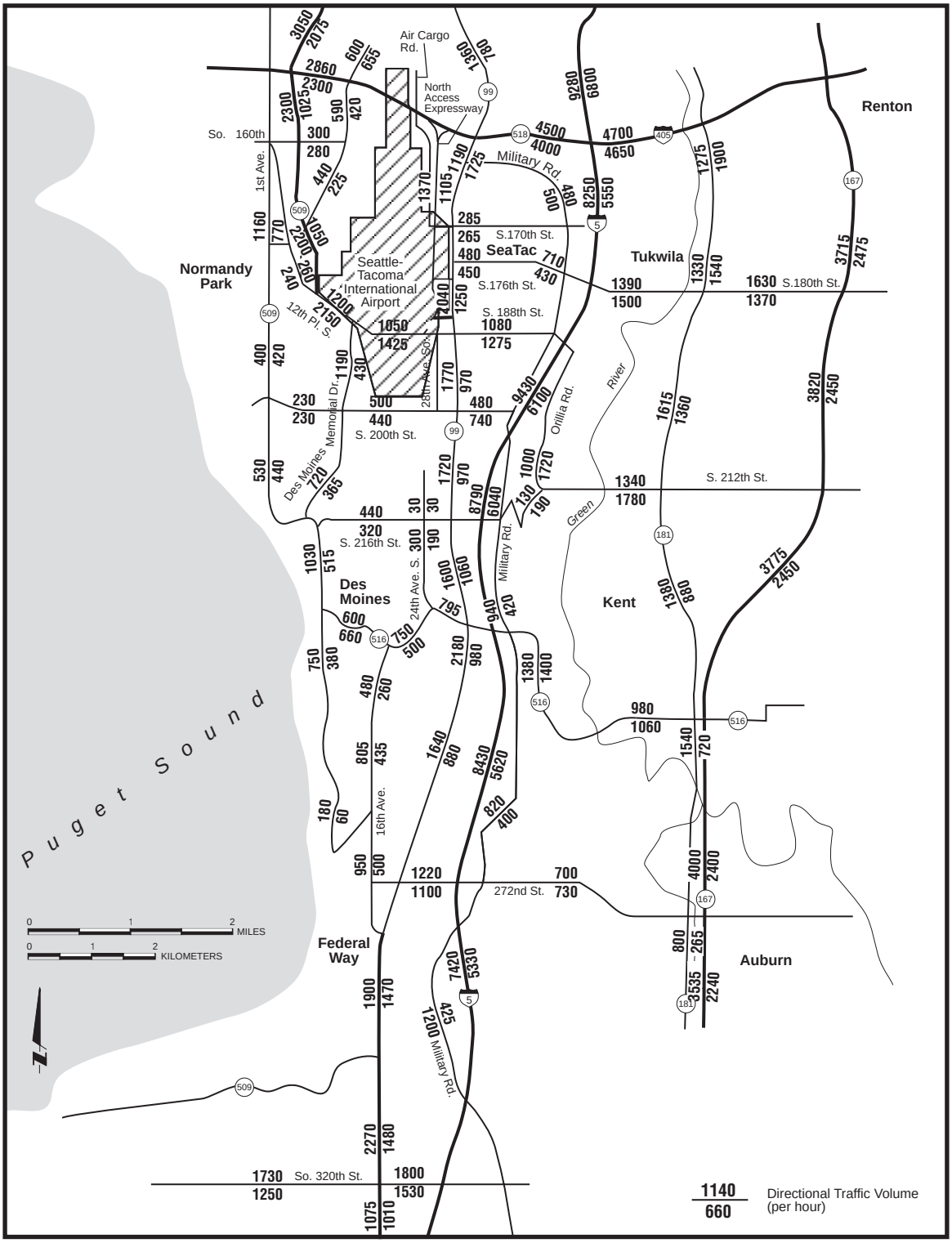

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FIGURE 1.3-1

Existing Traffic Volumes 1998 PM Peak Hour

SR 509: Corridor Completion/I-5/South Access Road
Environmental Impact Statement

On SR 509, the 1998 p.m. peak-hour volume (total both directions) was as high as 5,125 vph north of SR 518. Volumes decrease sharply south of SR 518, with a p.m. peak-hour volume of 3,325 vph (total both directions) at the south terminus of the freeway section. Between SR 516 and Des Moines Memorial Drive/12th Place South, traffic volumes are affected by the Cities of Normandy Park and Des Moines, with volumes (total both directions) ranging from 970 vph to 1,550 vph.

Level of service (LOS) is a qualitative description of the degree of comfort drivers experience as they travel a roadway. LOS grades range from LOS A, in which little or no delay is experienced, to LOS F, which denotes extreme congestion. WSDOT has established a LOS standard of D for peak-hour traffic operations on state highways.

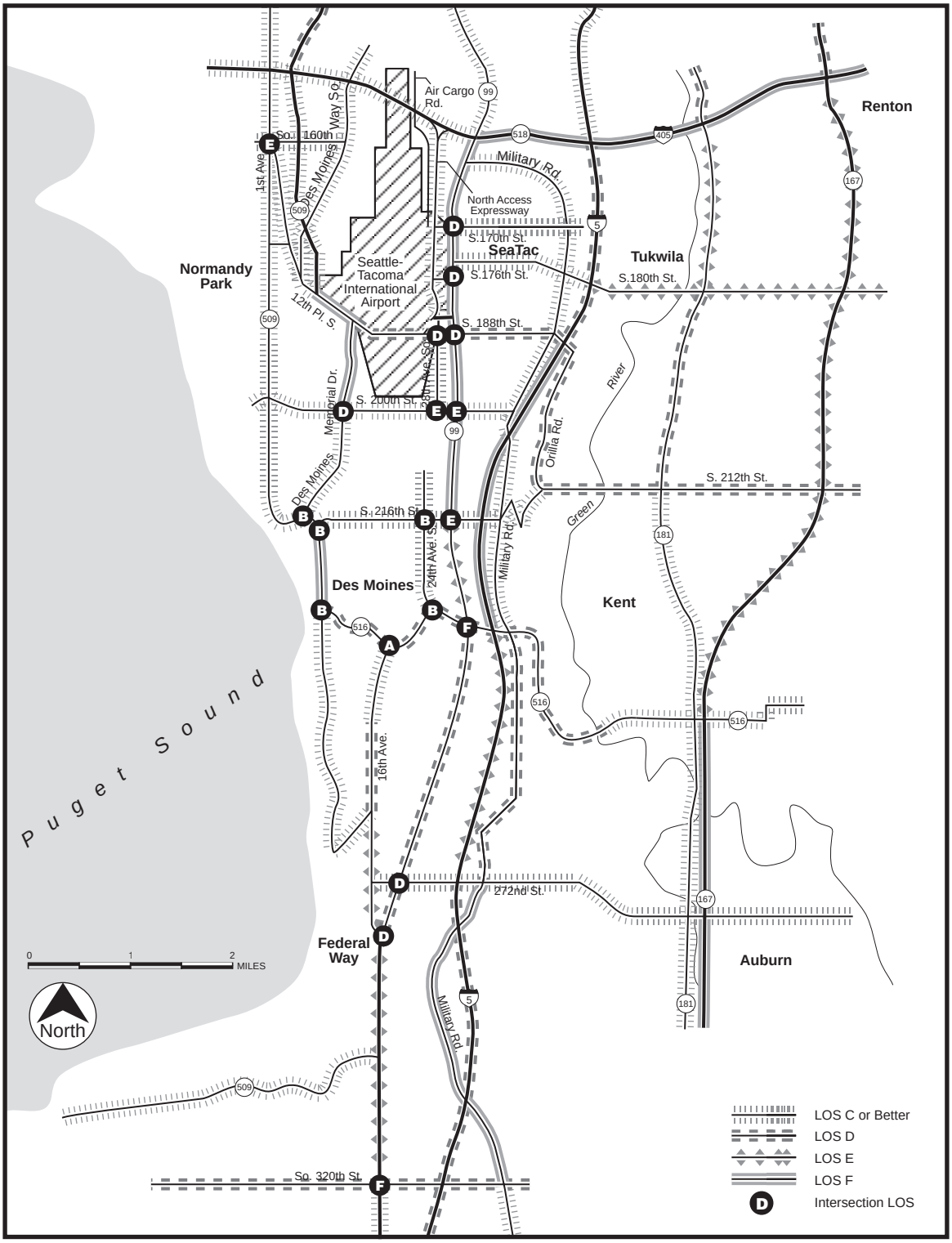
Currently, major transportation routes within the project vicinity are heavily congested during peak periods. Portions of the I-5, SR 99, and I-405 corridors are operating at LOS E or F. (LOS on SR 99 between South 177th Street and South 200th Street has improved since 1998, when traffic volume measurements were taken, due to roadway improvements.) Congestion is acute on the I-5 Southcenter Hill south of the intersection with I-405. The existing LOS are shown in Figure 1.3-2.

In the SR 509 corridor, the freeway segment operates at LOS C to D. Immediately south of the freeway terminus, the SR 509 corridor operates at LOS C or better to South 216th Street. Most traffic uses Des Moines Memorial Drive between the freeway and South 216th Street, rather than SR 509; as a result, portions of Des Moines Memorial Drive operate at LOS F. SR 509 operates at LOS F between South 216th Street and SR 516, where traffic volumes from SR 509 and Des Moines Memorial Drive merge.

Airport Traffic

Sea-Tac Airport is the single largest generator of vehicle trips in the project area. The airport handled 25 million annual passengers in 1997 and 1998 and serves as a regional center for air cargo.

In 1998, Sea-Tac Airport generated an annual average daily traffic volume of 66,000 vehicles. In August, the airport's busiest month, the average daily traffic volume is estimated at 84,000 vehicles, with 4,260 vph during the p.m. peak hour and 5,270 vph during the airport peak hour at midday (11 a.m. to 1 p.m.). This level of traffic volume impacts the adjacent roadway system, particularly at airport access points—the north access to and from SR 518 and along SR 99. Development supporting the airport such as hotels, rental car agencies, and offsite parking facilities also impacts circulation in the area.



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Note: Improvements made to SR 99 between South 170th Street and South 200th Street since 1999 have improved LOS within this roadway segment.

FIGURE 1.3-2

Existing Level of Service 1998 PM Peak Hour

Transit and High-Occupancy Vehicles

Transit service to the project area is provided by Metro and Sound Transit, which provide express and local service, transit centers, and park-and-ride lots. In addition to these services, taxis and private carriers serve the airport, and shuttle service is provided to the airport from hotels, car rental lots, and long-term offsite parking lots near Sea-Tac Airport.

The existing transit use within the vicinity of South 188th Street between approximately 1st Avenue South to I-5 is estimated at 17,400 person-trips per day. Transit mode split during the peak hours ranges from about 3 percent to 13 percent, with the higher mode splits for the cities of SeaTac, Renton, and Tukwila.

High-occupancy vehicle (HOV) facilities in the area consist primarily of HOV lanes on I-5, I-405, SR 167, and SR 99 from South 170th Street to

South 200th Street. Use of the HOV lanes varies during the p.m. peak hour from less than 200 vph to more than 1,000 vph. The highest use of all lanes is southbound on I-5 south of SR 518/I-405. Average peak-hour car occupancy is estimated at 1.15 to 1.24 persons per car, which means that approximately 80 to 90 percent of the vehicles have only one occupant.

Truck Travel

I-5 is the most heavily used truck route in the project area, with over 7,500 trucks per day per direction on Southcenter Hill measured in 1998. Other access-controlled highways (SR 167, SR 599, and SR 18) are more heavily used than parallel highways that have frequent intersections and traffic signals, such as SR 99 and SR 181.

Most trucks travel during daytime hours to meet the operating schedules of suppliers and receivers. Approximately 75 percent of all truck movement occurs between 6:00 a.m. and 6:00 p.m. During the a.m. peak period, trucks represent about 6 percent of the total traffic volume; during the p.m. peak period, trucks range from 4 percent to 7 percent of the total traffic volume. Although trucks represent a small portion of the total traffic, their effect on operations is much greater. Each truck (in terms of capacity) is equivalent to between 1.5 and 4.5 passenger vehicles, depending on the grade of the roadway (source: *Highway Capacity Manual*, Transportation Research Board [TRB] 1997, Table 3-4).

Future Travel Demand and Capacity

A comparison of the total travel demand for the project area is summarized in Table 1.3-1. Total peak-hour vehicle travel demand in the project area would increase by 35 percent without the project by the year 2020. This equals an approximate 1.2 percent growth rate per year from 1991 to 2020. (The

transportation analysis for the build alternatives relies on the travel demand model developed by The Transpo Group for forecasting future traffic volumes.)

Table 1.3-1			
Vehicle Travel Demand Comparison[a] Year 2020			
	1991	**2020 (Without Project)**	**Percent Change**
Total Trips[b]	128,500	173,600	35

[a] *p.m. peak hour.*
[b] *Total vehicle trips for all zones, including externals.*

A number of transportation improvements, including high-capacity transit (HCT) projects, HOV and other roadway improvements, and implementation of transportation demand management (TDM) strategies, are proposed in the project vicinity. When implemented, the transit projects are expected to reduce vehicle travel demand for work trips originating in or destined for the project area by up to 4 percent (and are accounted for in Table 1.3-1). Overall p.m. peak-hour travel demand, including through trips (trips which do not either originate or terminate in the project area), would be reduced by approximately 8.5 percent because of regional transit improvements. TDM programs could reduce trips by as much as 20 percent. Without the planned regional and local transit improvements, vehicle travel demand would increase even more, resulting in more congestion and lower travel speeds.

Traffic Volumes and Level of Service

Figure 1.3-3 shows the forecast 2020 peak-hour traffic volumes without the project. In the SR 509 corridor north of SR 518, year 2020 traffic volumes would increase by approximately 6 percent to over 5,400 vph (total both directions). In the freeway section south of SR 518, volumes would increase up to 35 percent to over 4,500 vph (total both directions). The arterial section of SR 509 from Des Moines Memorial Drive/12th Place South to SR 516 would experience traffic growth of about 11 percent. The freeway section of SR 509 south of SR 518 would continue to be underutilized, particularly in the northbound direction.

Figure 1.3-4 shows the associated LOS for the year 2020, based on the above travel demand assumptions without the SR 509 extension. Large parts of the I-5, SR 99, I-405, SR 518, SR 181, and SR 167 corridors, as well as some arterials feeding the corridors, would operate at LOS F. The SR 509 corridor would continue to be underutilized due to poor access to major routes to the south.

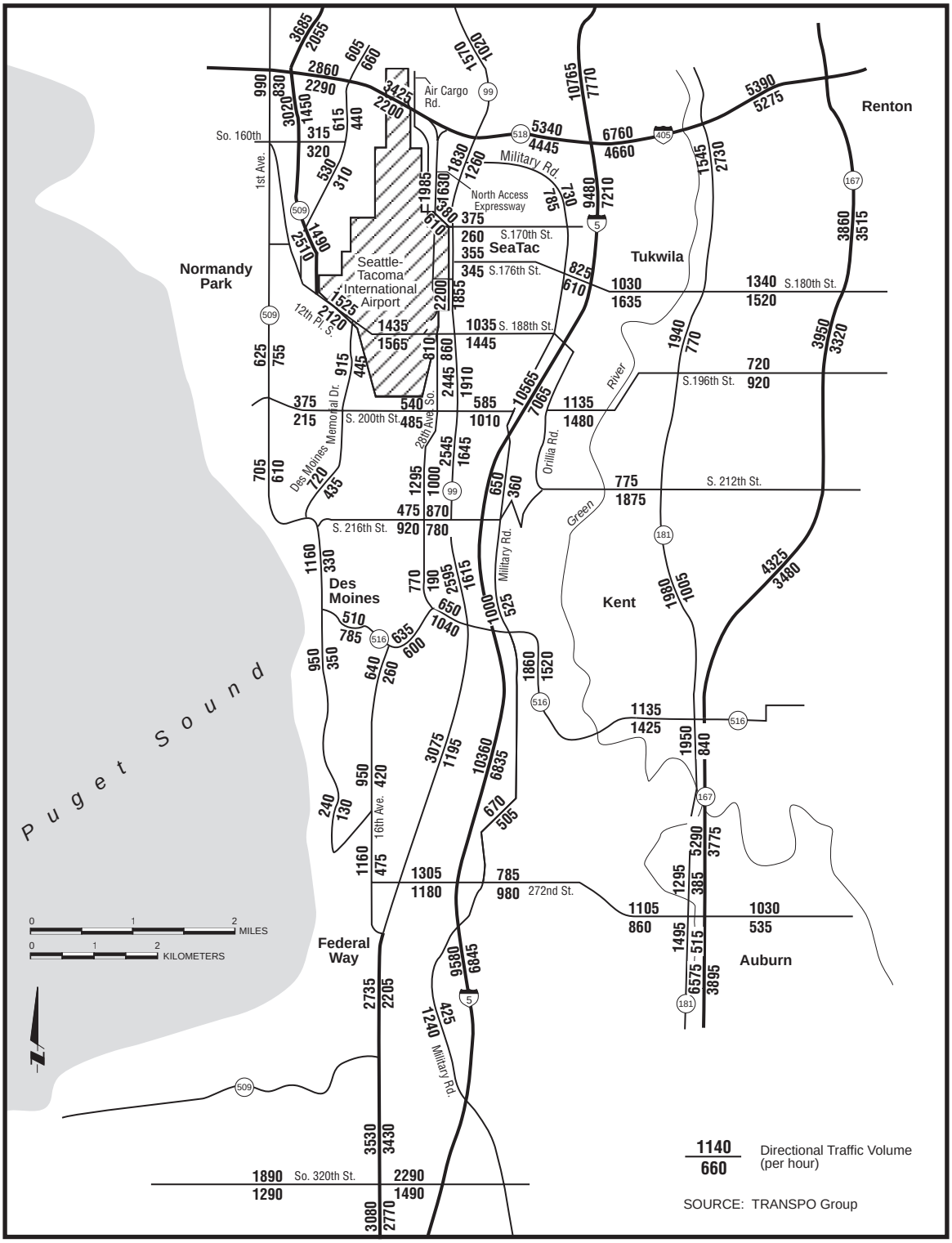

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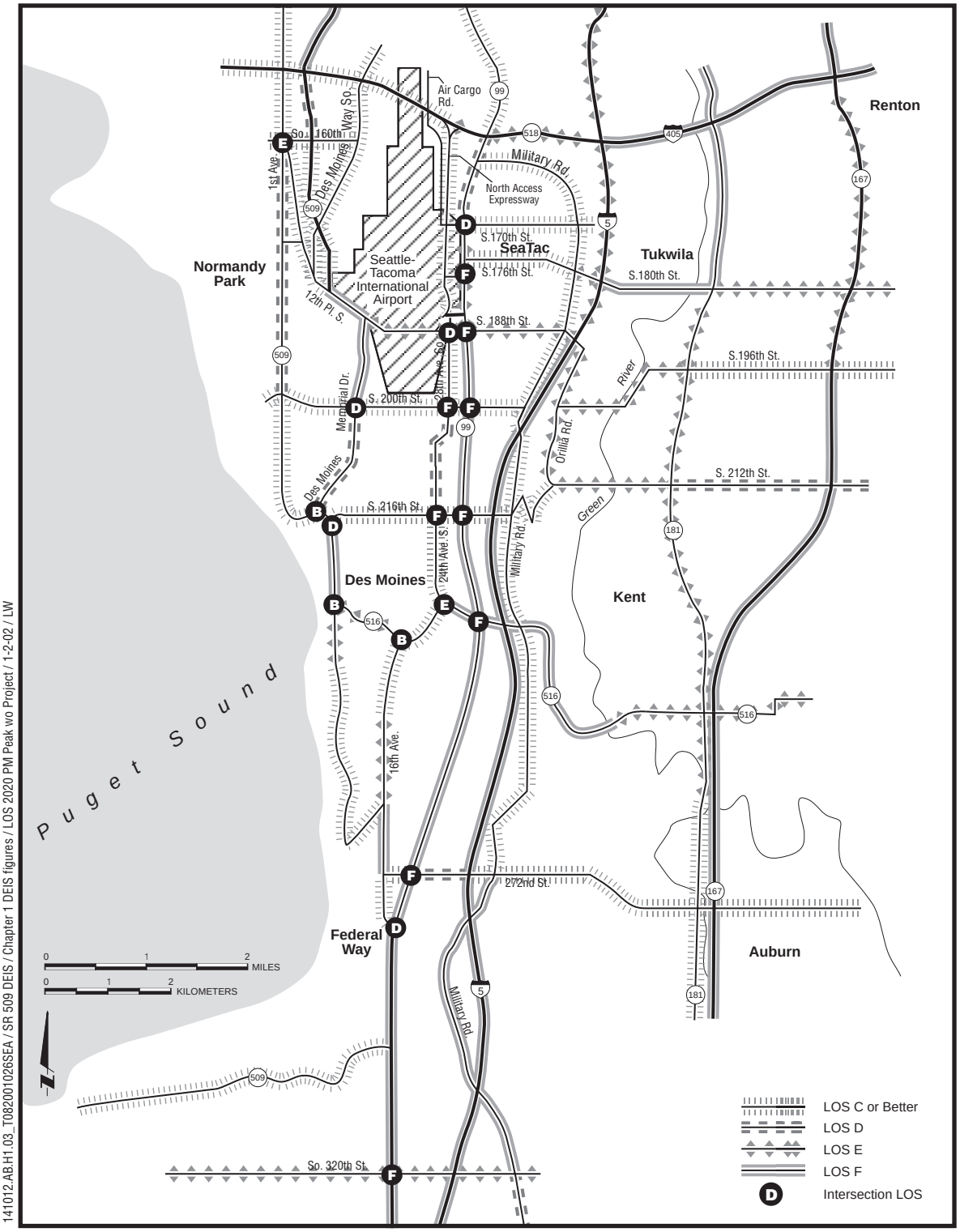
FIGURE 1.3-3

Traffic Volumes 2020 PM Peak Hour (Without Project)



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Note: Roadway level of service displayed is for travel direction with highest volume.

FIGURE 1.3-4

Level of Service 2020 PM Peak Hour (Without Project)

Airport Travel Demand

Travel demand to and from Sea-Tac Airport in 2020 is a reflection of the total number of passengers and the amount of air cargo passing through the airport. The airport would generate approximately 155,400 vehicle trips per day and 8,100 p.m. peak-hour trips in 2020, an increase of more than 70 percent over existing conditions.

Under current conditions, approximately 57 percent of the airport passenger terminal traffic accesses Sea-Tac Airport via the North Airport Expressway, 25 percent via South 182nd Street, and 18 percent via South 170th Street at Air Cargo Road. However, by 2010, based on the Airport Master Plan Update (adopted by Resolution 3212 [as amended] on August 1, 1996), approximately 60 percent of airport traffic is expected to access the passenger terminal via the North Airport Expressway, 20 percent from South 182nd Street, and 20 percent via South 170th Street. Because of the increased traffic to and from the south, traffic congestion at the airport entrances on SR 99 would increase substantially.

Transit and High-Occupancy Vehicles

Transit use would increase because of improved service (described below) and higher travel demand (described above). Despite the increased transit usage, congestion in the project vicinity would increase in the future.

Three major transit projects (Link Light Rail Transit System, Green River Valley Community Rail, and Sea-Tac Airport People Mover) expected to be in place by 2020, even without the project, would result in substantial improvement in transit service in the project area. Other transit-related service, local transit routes, transit flyer stops, HOV lanes, and park-and-ride lots also would be part of the overall transit program. In addition, new transit/carpool lanes are either planned, under construction, or recently completed for I-5, SR 99, SR 167, and SR 509.

The lanes would have higher usage in the future as more carpools are formed, and the number of carpools on I-5 would be expected to more than double by 2020. Travel demand by carpools traveling southbound on I-5 south of SR 518/I-405 could approach the theoretical capacity of the HOV lanes in the future.

TDM programs regionwide and specific to the project area would reduce peak-hour travel demand. Such strategies would result in higher average car occupancy, as well as higher transit mode splits. In 2020, the average car occupancy in the p.m. peak hour would range from 1.25 to 1.35 (an increase of approximately 9 percent over existing conditions), which is equivalent to 70 percent to 80 percent of the vehicles being single-occupant. Combined

with increases in transit mode split, the transportation system would carry substantially more people in 2020 than in 1998.

Truck Travel

Truck volumes on SR 509, SR 99, I-5, SR 181, and SR 167 are expected to increase from about 30,000 trucks per day in 1998 to 46,600 trucks per day in 2020 because of population and employment growth and economic development and prosperity in the project area. This represents a growth rate of approximately 2 percent per year to 2020. Truck traffic is expected to increase at a faster rate than passenger-vehicle traffic.

1.3.3 Modal Interrelationships

The proposed project is located at the confluence of the movement of goods and people in the King County area. South King County has the largest concentration of manufacturing and wholesale/distribution industries in Washington. Air freight and passenger travel primarily flow through Sea-Tac Airport. Commuters pass through the area during the a.m. and p.m. peak hours on their way to and from jobs in the commercial centers of Seattle, Bellevue, and elsewhere in the county. The movement of goods and people stretches the capacity of the existing transportation network as trucks, passenger cars, and HOVs compete with each other for roadway space.

Schedule reliability is one of the biggest concerns of the trucking industry. Traffic using I-5 is often delayed by accidents or major incidents that can make truck deliveries unreliable. In 1996, the section of I-5 between SR 599 and SR 516 experienced an average of 3 accidents per day and 1 major incident every 2 weeks. The time delays caused by accidents and congestion represent inefficiencies and costs for the trucking industry and the industries it serves.

As noted previously, in 1998 Sea-Tac Airport generated an annual average of 66,000 vehicles per day, which contributes to the inefficiencies of other modes.

1.4 Objectives of the Action

The objectives of the proposed SR 509 Corridor Completion/I-5/South Access Road Project improvements, as adopted by the Steering Committee, are as follows:

- Support local and regional comprehensive planning and development
    - Connect to existing and planned business centers (Aviation Business Center, Des Moines business parks, SeaTac Urban Center, and the City of Des Moines Pacific Ridge Neighborhood Improvement project)

- Serve the Port of Seattle's South Aviation Support Area (SASA)

- Maintain efficiency of existing roadways in the immediate vicinity of the airport terminals and parking garage
  - Extend these existing airport roadways south to connect to regional highway system
- Relieve local congestion
  - Relieve truck traffic on city streets
  - Serve peak-hour travel demands to and from major residential and commercial areas
  - Relieve congestion on South 188th Street, South 200th Street, SR 99, Military Road, Marine View Drive, SR 516, 16th Avenue South, and Des Moines Memorial Drive
- Serve harbor freight operations
  - Reduce travel times between harbor and freight destinations
  - Provide alternative routes, including direct route to Kent
- Improve regional mobility and safety
  - Serve Cross-Valley Connector traffic
- Be compatible with connections to HCT
  - Allow for full HOV connectivity
  - Support HCT and south corridor bus plans of local transit agencies
- Develop broad public and political support for the preferred alternative
  - Involve citizens in the identification and recommendation of a preferred alternative
  - Obtain approval of government councils and agencies
- Design project in an environmentally responsible manner
  - Avoid or minimize detrimental effects on environmentally sensitive areas
  - Mitigate environmental impacts where avoidance is not possible
  - Partner with other agencies to provide watershed-based mitigation solutions

- Provide cost-effective alternatives and solutions
    - Balance street system capacity with demand
    - Balance engineering, environmental, social, and economic issues or costs with benefits

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